NOISE ELEMENT OF THE GENERAL PLAN
GOALS, POLICIES, AND IMPLEMENTATION

for the
CITY OF SANTA MONICA

Adopted July 21, 1992

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Prepared by:
MESTRE GREVE ASSOCIATES AND
THE LAND USE AND TRANSPORTATION
MANAGEMENT DEPARTMENT
PROGRAM AND POLICY DEVELOPMENT DIVISION

FINAL

NOISE ELEMENT OF THE GENERAL PLAN

for the

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PROGRAM AND POLICY DEVELOPMENT DIVISION

ATTACHMENT C

RESOLUTION NO. 8442(CCS)

(City Council Series)

A RESOLUTION OF THE CITY COUNCIL
OF THE CITY OF SANTA MONICA
AMENDING THE NOISE ELEMENT OF THE GENERAL PLAN

WHEREAS, California Government Code Section 65302(f) requires that each local jurisdiction adopt a Noise Element as part of the General Plan which shall identify and appraise noise problems in the community; and,

WHEREAS, Santa Monica's existing Noise Element was adopted by the City Council in 1975; and,

WHEREAS, on December 12, 1988, a public workshop was held to identify noise issues and concerns in the City; and,

WHEREAS, from September 20, 1989 to October 20, 1989, the draft Noise Element was made available for public review; and,

WHEREAS, on November 29, 1989, the Planning Commission conducted a public hearing on the draft Noise Element; and,

WHEREAS, the Draft Noise Element analyzes and quantifies noise levels and the extent of noise exposure in the community and establishes policies and programs to minimize the exposure of community residents to excessive noise; and

WHEREAS, it has been determined that the project will have no substantial adverse impact on the environment and a Negative Declaration has been prepared,

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SANTA MONICA DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. The document entitled Noise Element attached hereto as Exhibit A and incorporated herein by this reference is hereby adopted and certified as the official Noise Element of the General Plan for the City of Santa Monica and thus replaces the Noise Element adopted in 1975.

SECTION 2. The City Council certifies that the environmental review for the project was conducted in full compliance with State and City CEQA Guidelines.

SECTION 3. The City Clerk shall certify to the adoption of this Resolution, and thenceforth and thereafter the same shall be in full force and effect.

APPROVED AS TO FORM:

Robert M. Myers

ROBERT M. MYERS
City Attorney

legal/Noisreso

Adopted and approved this 21st day of July, 1992.

Mayor

I hereby certify that the foregoing Resolution No. 8442(CCS) was duly adopted by the City Council of the City of Santa Monica at a meeting thereof held on July 21, 1992 by the following Council vote:

Ayes:	Councilmembers:	Abdo, Genser, Holbrook, Olsen, Vazquez
Noes:	Councilmembers:	None
Abstain:	Councilmembers:	None
Absent:	Councilmembers:	Katz, Zane

ATTEST:

City Clerk

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SANTA MONICA NOISE ELEMENT

OF THE GENERAL PLAN

INTRODUCTION

A mandatory element of the General Plan, the Noise Element is required to identify and appraise noise problems in a community. The Noise Element for the City of Santa Monica goes well beyond satisfying minimal state requirements by providing a comprehensive evaluation of existing noise problems and calling for creative methods of protecting the community from excessive noise. From construction noise and clamoring mechanical equipment to freeway noise and the cacophony of barking dogs, the updated Noise Element provides more proactive solutions than before. In order to stem noise problems before they occur in the City , many new noise control measure will be integrated into the development review process.

It is important that the Noise Element be consistent with other elements of the General Plan. Of particular relevance are the Land Use and Circulation Element and Housing Element. Of these, the Circulation Element has the most direct effect on community noise levels. Review of these elements indicates that adequate consideration for noise is included and that the Noise Element is consistent with these General Plan Elements.

The Noise Element follows the recently revised State guidelines in the State Government code Section 653021(g) and Section 46050.1 of the Health and Safety Code. The element quantifies the community noise environment in terms of noise exposure contours for both near- and long-term levels of growth and traffic activity. This information will become a guideline for the development of land use policies to achieve compatible land uses and provide baseline levels and noise source identification for local noise ordinance enforcement. The Element is divided into five sections and organized as follows:

1. **BACKGROUND INFORMATION AND INVENTORY OF NOISE CONDITIONS** describes the existing and future noise levels in the City, and provides some background and definitions helpful in understanding community noise control issues.

2. **ISSUE IDENTIFICATION** presents the noise issues in the City that are to be addressed within the Noise Element.

3. **FINDINGS** section summarizes the noise environment and the implementation programs to minimize noise and land use conflicts.

4. **GOAL STATEMENT** defines the goals of the Noise Element.

5. **GOALS, POLICIES, AND IMPLEMENTATION** summarizes the policies to be implemented by the City to achieve these goals.

Section 1.0

BACKGROUND INFORMATION AND INVENTORY OF NOISE CONDITIONS

This section contains a detailed description of the current and projected noise environment within the City. This description of the noise environment includes identification of noise sources and noise sensitive land uses, a community noise measurement survey and noise contour maps.

To define the noise exposure, this section of the report defines noise terminology, describes the noise measurement results and identifies the major sources of noise in the community. The sources of noise in Santa Monica include: freeway, aircraft overflights, arterial roadways, and industrial and commercial centers. To completely assess the noise environment in the City, noise sensitive receptors must also be identified. As mandated by the State, noise sensitive receptors include, but are not limited to, areas containing schools, hospitals, rest homes, long-term medical or mental care facilities, or any other land use area deemed noise sensitive by the local jurisdiction.

Based upon the identification of the major noise sources and the location of sensitive receptors, a noise measurement survey was conducted. The function of the survey is threefold. The first is to determine the existing noise levels at noise sensitive land uses. The second is to provide empirical data for the correlation and calibration of the computer modeled noise environment. A third function is to obtain an accurate description of the ambient noise levels in various communities throughout the City.

Noise contours for all of the major noise sources in Santa Monica were developed based upon current traffic conditions. These contours were determined from the traffic levels for these sources. The contours are expressed in terms of the Community Noise Equivalent Level (CNEL). The existing conditions scenario is derived from 1988 traffic levels and environmental conditions.

1.1 Definitions

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the way that the Richter scale is used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud; and 20 dBA higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud). Examples of various sound levels in different environments are shown in Exhibit 1.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criteria is based on such known effects of noise on people as hearing loss (not generally a factor with community noise), communication interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is, in general, not a concern in community noise problems. The potential for noise-induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments with long-term exposure. The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dBA for 8 hours per day to protect from hearing loss. Noise levels in neighborhoods, even in very noisy airport environments near major international airports, is not sufficiently loud to cause hearing loss.

COMMUNICATION INTERFERENCE is one of the primary concerns in environmental noise problems. Communication interference includes speech interference and activities such as watching television. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

SLEEP INTERFERENCE is a major noise concern in noise assessment and, of course, is most critical during nighttime hours. Sleep disturbance is one of the major causes of annoyance due to community noise. Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages and cause awakening. Noise may even cause awakening which a person may or may not be able to recall.

Extensive research has been conducted on the effect of noise on sleep disturbance. Recommended values for desired sound levels in residential bedroom space range from 25 to 45 dBA with 35 to 40 dBA being the norm. The National Association of Noise Control Officials have published data on the probability of sleep disturbance with various single event

SOUND LEVELS AND LOUDNESS OF ILLUSTRATIVE NOISES IN INDOOR AND OUTDOOR ENVIRONMENTS

(A-Scale Weighted Sound Levels)

dB(A)	OVER-ALL LEVEL Sound Pressure Level Approx. 0.0002 Microbar	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
130	UNCOMFORTABLY	Military Jet Aircraft Take-Off With After-burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
120 110	LOUD	Turbo-Fan Aircraft @ Take Off Power @ 200 Ft. (90)	Riveling Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100	VERY	Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (106) Bell J-2A Helicopter @ 100 Ft. (100)		100 dB(A) 8 Times as Loud
90	LOUD	Power Mower (96) Boeing 737, DC-9 @ 6080 Ft. Before Landing (97) Motorcycle @25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Prop. Airplane Flyover @ 1000 Ft. (88) Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 +or- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
	JUST AUDIBLE	(dB[A] Scale Interrupted)		
10	THRESHOLD OF HEARING			

SOURCE: Reproduced from Melville C. Branch and R. Dale Beland, Outdoor Noise in the Metropolitan Environment, Published by the City of Los Angeles, 1970, p.2.

Exhibit 1

Examples of Typical Sound Levels

noise levels. Based on experimental sleep data as related to noise exposure, a 75 dBA interior noise level event will cause noise induced awakening in 30 percent of the cases.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm. Generally, physiological responses are a reaction to a loud short term noise such as a rifle shot or a very loud jet overflight.

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability. The level of annoyance, of course, depends on the characteristics of the noise (i.e., loudness, frequency spectra, time, and duration), and how much activity interference (e.g., speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that 2 to 10 percent of the population is highly susceptible to noise not of their own making, while approximately 20 percent are unaffected by noise. Attitudes are affected by the relationship between the person and the noise source. (Is it our dog barking or the neighbor's dog?) Whether we believe that someone is trying to abate the noise will also affect our level of annoyance.

Community noise is generally not a steady state and varies with time. Under conditions of non-steady state noise, some type of statistical metric is necessary in order to quantify noise exposure over a long period of time. Several rating scales have been developed for describing the effects of noise on people. They are designed to account for the above known effects of noise on people.

These scales are: the Equivalent Noise Level (LEQ), the Day Night Noise Level (LDN), and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

LEQ is the "energy" average noise level during the time period of the sample. It is a number that represents a decibel sound level. This constant sound level would contain an equal amount of energy as a fluctuating sound level over a given period of time. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24 hours.

LDN is a 24 hour, time-weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events

that take place during the night (10 pm to 7 am) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where sleep is the most probable activity.

CNEL is similar to the LDN scale except that it includes an additional 5 dBA penalty for events that occur during the evening (7 pm to 10 pm) time period. Either LDN or CNEL may be used to identify community noise impacts within the Noise Element. Example noise environments in terms of the CNEL metric are shown in Exhibit 2.

The purpose of this section is to present information regarding the compatibility of various land uses with environmental noise. It is from these guidelines and standards that the City of Santa Monica Noise Criteria and Standards were developed. Noise/land use guidelines have been produced by a number of Federal and State agencies including the Federal Highway Administration, the Environmental Protection Agency, the Department of Housing and Urban Development, the American National Standards Institute and the State of California. The criteria presented later in this report were derived from these agency guidelines and consider the specifics of the City of Santa Monica.

The noise environment in Santa Monica was modeled using a comprehensive noise measurement survey of existing noise sources and incorporating these results into computer noise models (it is, of course, impossible to measure future noise levels so we must rely on computer noise models for future noise estimates). The noise environment is commonly presented graphically in terms of lines of equal noise levels, or contours. The measurement and modeling are briefly described below.

1.2 Noise Measurements

Twenty-five sites were selected for measurement of the noise environment in Santa Monica. A review of noise complaints and identification of major noise sources in the community provided the initial base for development of the community noise survey. The measurement locations were selected on the basis of proximity to major noise sources and noise sensitivity of the land use. The measurement locations are depicted in Exhibit 3.

The noise measurement program was conducted in two segments. The short-term (15 minute LEQ) measurements were taken on January 6, 9, and 10, 1989 at twenty locations throughout the City. The long-term (24 hour LEQ) measurements were taken on January 13, 27, 31, and March 30, 1989. The results of the ambient short-term noise measurements at each site are depicted in Exhibit 4. These figures also depict the date and time of the measurement and the primary noise source affecting the noise environment. The quantities measured were the Equivalent Noise Level (Leq), the maximum noise level (Lmax) and the Percent Noise Levels (L%). The results of the ambient long-term noise

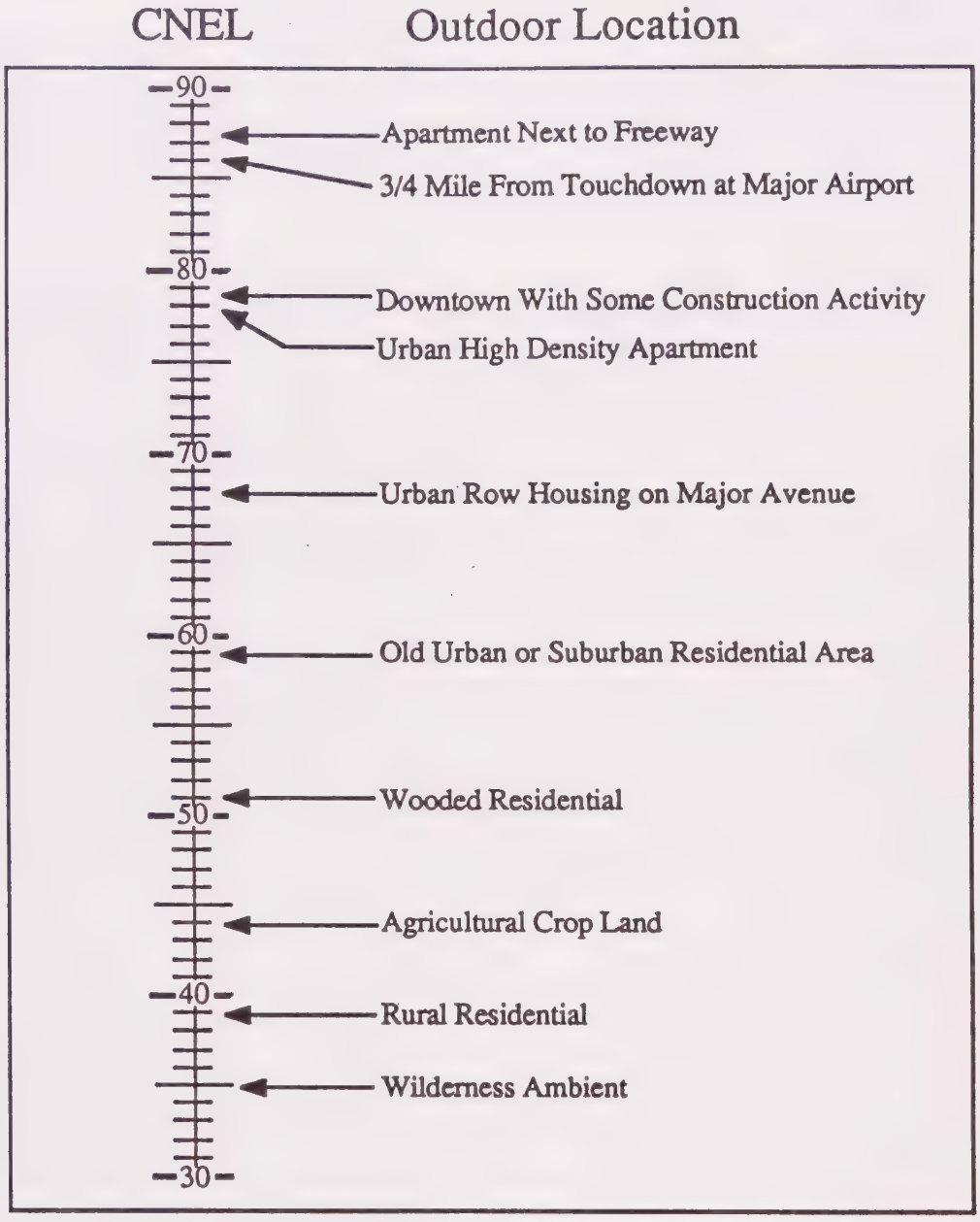

Exhibit 2

Typical Outdoor Noise Levels

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Exhibit 3

Noise Measurement Locations

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	Location	Date	Sound Level (dBA) 50 60 70 80 90	Noise Sources
1	Alley along Santa Monica Blvd.	1/6/89 10:52 AM	57 Car; 50 52 56 60 74	Car Repair & Traffic
2	Washington and 16th	1/6/89 11:23 AM	62 Car; 45 49 57 66 70	Children & Traffic
3	Montana and 25th	1/6/89 11:51 AM	67 Truck; 53 56 64 69 84	Traffic & Children
4	Carlyle and 17th	1/6/89 12:24 PM	63 Truck; 45 47 54 63 82	Traffic, Busses & Gardening
5	Ocean and Wilshire	1/6/89 1:09 PM	65 Car Horn; 55 59 63 68 80	Traffic
6	Ocean and Sea View Terrace	1/9/89 11:49 AM	67 Bus; 53 59 66 70 81	Traffic
7	Pico and Lincoln	1/9/89 12:24 PM	70 Car Door; 62 64 68 72 83	Traffic & Parking Lot
8	11th Street	1/9/89 12:52 PM	71 Dump Truck; 57 61 68 73 90	Traffic & Aircraft
9	Ashland and Lincoln	1/9/89 1:29 PM	63 Car; 50 57 62 65 71	Traffic
10	Cloverfield and Pearl	1/9/89 2:02 PM	67 Car; 52 56 64 70 79	Traffic

Legend: Leq (Cause Of Lmax); L99 L90 L50 L10 Lmax

Exhibit 4

Short-Term Measurement Results

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	Location	Date	Sound Level (dBA) 50 60 70 80 90	Noise Sources
11	28th St. abd Ocean Park	1/9/89 3:00 PM	52 56 61 65 68 82 Truck	Traffic & Aircraft
12	28th/Stewart and Exposition	1/9/89 3:37 PM	53 57 63 66 69 81 Truck	Traffic
13	16th St. and Freeway	1/10/89 1:29 PM	58 60 61 63 51 70 Truck	Freeway Traffic
14	19th St and Colorado	1/10/89 2:11 PM	54 56 59 63 67 77 Truck	Traffic & Cement Co.
15	Lincoln Park	1/10/89 2:46 PM	55 59 65 67 69 83 Car	Traffic
16	5th St. and Strand	1/10/89 3:19 PM	49 50 56 60 63 77 Car	Traffic & Distant Chainsaw
17	3rd St. and Ocean Park	1/10/89 3:59 PM	52 56 63 66 69 85 Car Door	Traffic & Busses
18	14th St. and Pine	1/10/89 4:26 PM	50 52 59 61 65 73 Car	Traffic & Children
19	Adelaide Between 4th and 7th	1/10/89 5:06 PM	44 45 48 58 59 75 Car	Traffic & Aircraft
20	26th St. California	1/10/89 5:53 PM	53 59 67 68 71 79 Truck	Traffic

Legend: L99 L90 Leq L50 L10 Lmax — Cause Of Lmax

Exhibit 4 (continued)

Short-Term Measurement Results

measurements at each site are depicted in Exhibits 5A, 5B, 5C, and 5D.

When examining the short term data shown in Exhibit 4 it is important to note that most of these sites were in the front yards of homes and are quite close to the road. These data are intended to identify noise levels over a broad range of the City and are not an assessment of impacts at these sites. In all cases the major sources of noise are motor vehicles on local streets. Exhibit 4 shows this very clearly. The maximum noise levels are usually due to trucks or loud cars. The minimums occur when traffic is very light or no cars are passing by.

In examining Exhibit 5 the daily twenty-four hour variation in noise levels can be seen. The horizontal line in Exhibit 5 is the CNEL (weighted 24 hour logarith mic average). The hours that have high peaks usually correspond to heavy traffic hours or some very loud peak noise events(s). There is a morning peak hour after which traffic noise remains somewhat consistent throughout the day. In the evening traffic and noise decrease to very low levels in the middle of the night. These are typical variations for an urban area.

1.3 Sources of Noise.

The sources of noise in Santa Monica fall into four basic categories. These are: freeways, aircraft overflights, major and minor arterial roadways, and stationary sources.

The most common sources of noise in Santa Monica are transportation related noise sources. These include automobiles, trucks, motorcycles, railroads, and aircraft. Motor vehicle noise is of concern because it is characterized by a high number of individual events which often create a sustained noise level and its proximity to areas sensitive to noise exposure. Aircraft operations, though infrequent, may generate high noise levels that can be disruptive to human activity.

The City of Santa Monica is bisected by a freeway, and a number of arterial road ways. Traffic noise on surface streets is a significant source of noise within the community. The major roadways in the City include such roads as Lincoln Boulevard, Ocean Park Boulevard, Pico Boulevard, Olympic Boulevard, the Santa Monica Freeway, Santa Monica Boulevard, Wilshire Boulevard, and San Vicente Boulevard.

The City of Santa Monica has industrial and commercial sources of noise at a number of locations throughout the City. These include commercial centers that range in size from major aerospace corporations to small industrial operations. Many of these smaller operations are located in strip commercial zones adjacent to residential land uses. Examples are automobile dealerships and repair shops on Santa Monica Boulevard. The types of noise disturbance from these activities can range from short-duration, loud events such as trucks accessing the facility

Hourly Leq Noise Levels And CNEL For Measurement Location 21

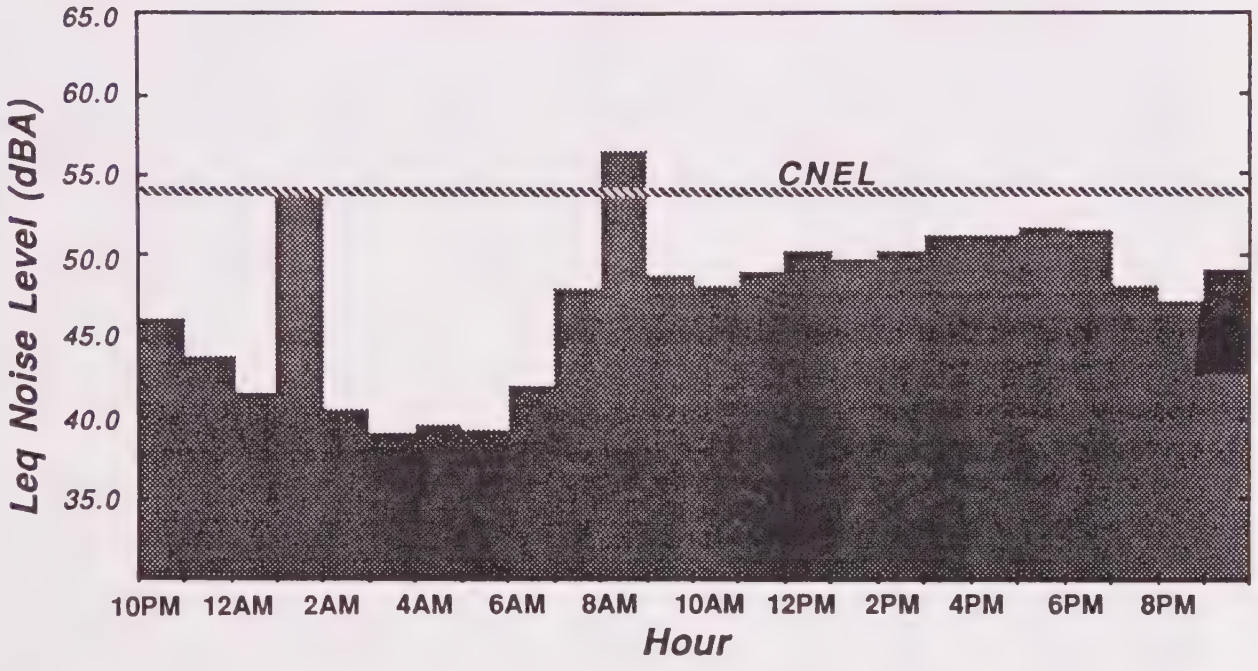


Exhibit 5 A

Long-Term Measurement Results

Hourly Leq Noise Levels And CNEL For Measurement Location 22

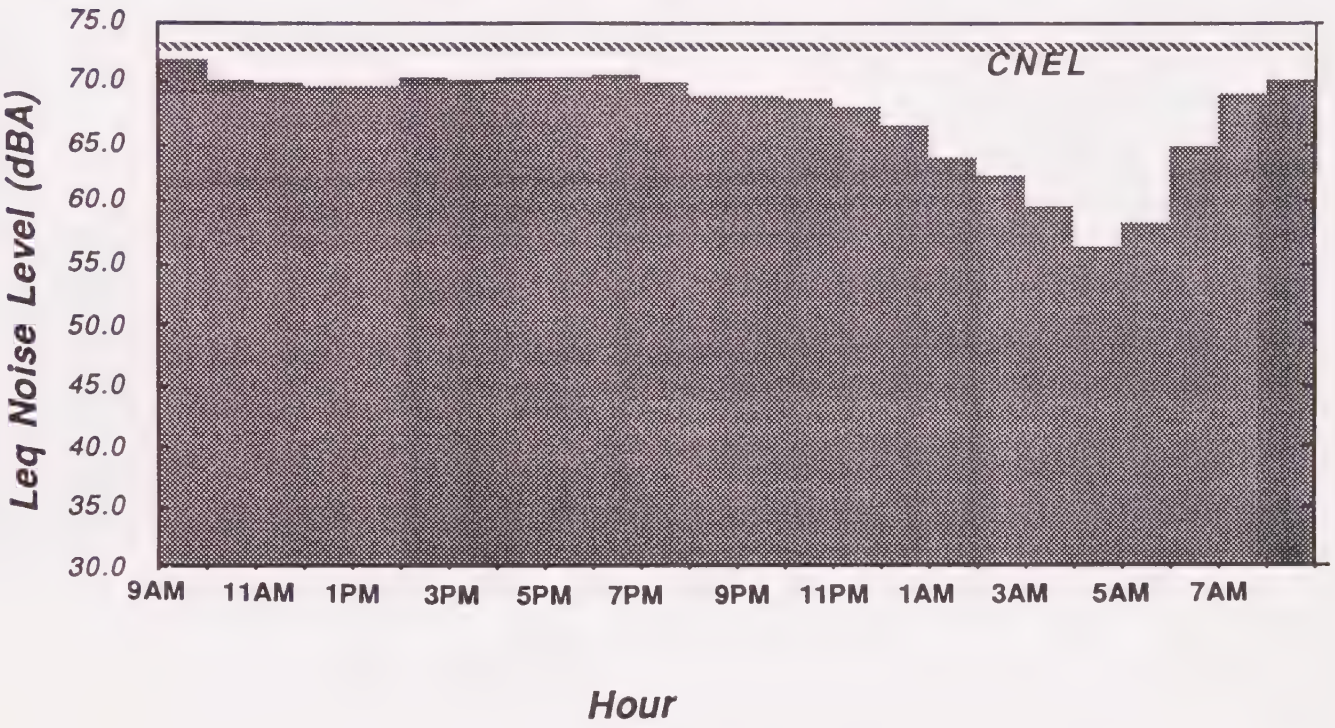


Exhibit 5 B

Long-Term Measurement Results

Hourly Leq Noise Levels And CNEL For Measurement Location 23

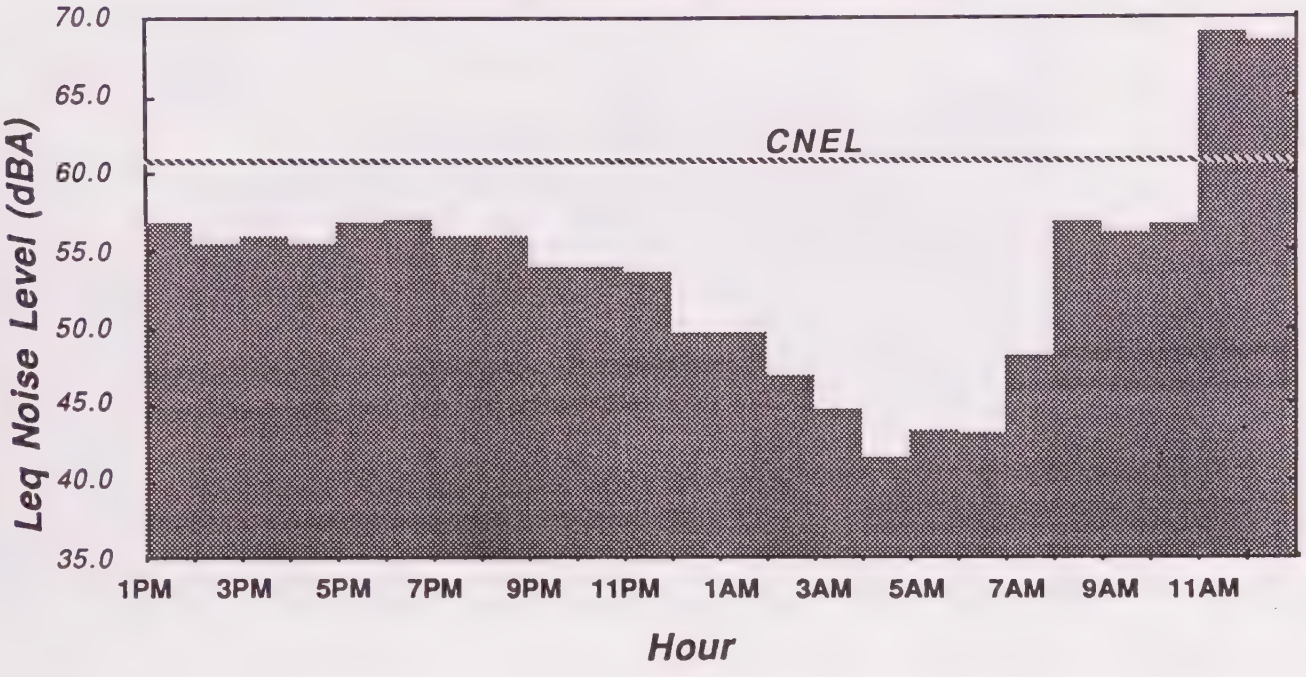


Exhibit 5 C

Long-Term Measurement Results

Hourly Leq Noise Levels And CNEL For Measurement Location 24

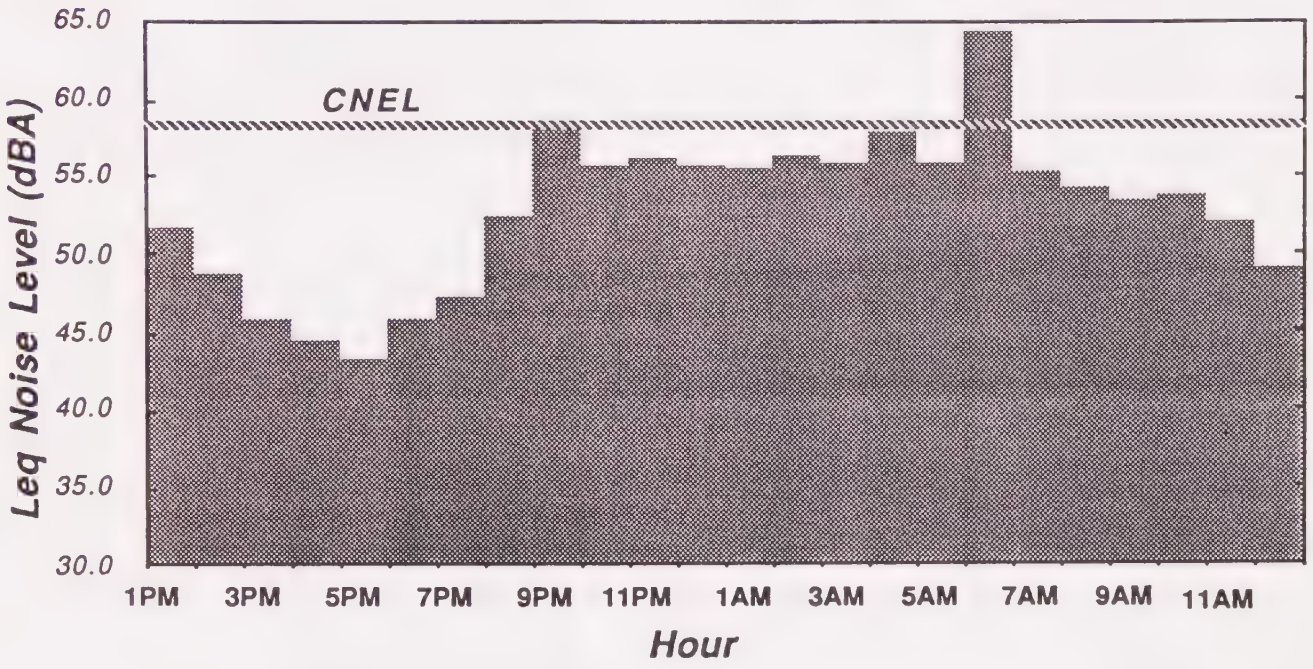


Exhibit 5 D

Long-Term Measurement Results

to continuous noise such as from refrigeration units or compressors. Late night activity associated with restaurants is also a concern.

1.4 Noise Sensitive Receptors.

The City of Santa Monica has a number of noise sensitive land uses. Within the city are a number of public and private schools, day care centers and rest homes. The distribution of these facilities varies from moderately quiet residential areas to major transportation corridors.

1.5 Community Noise Contours.

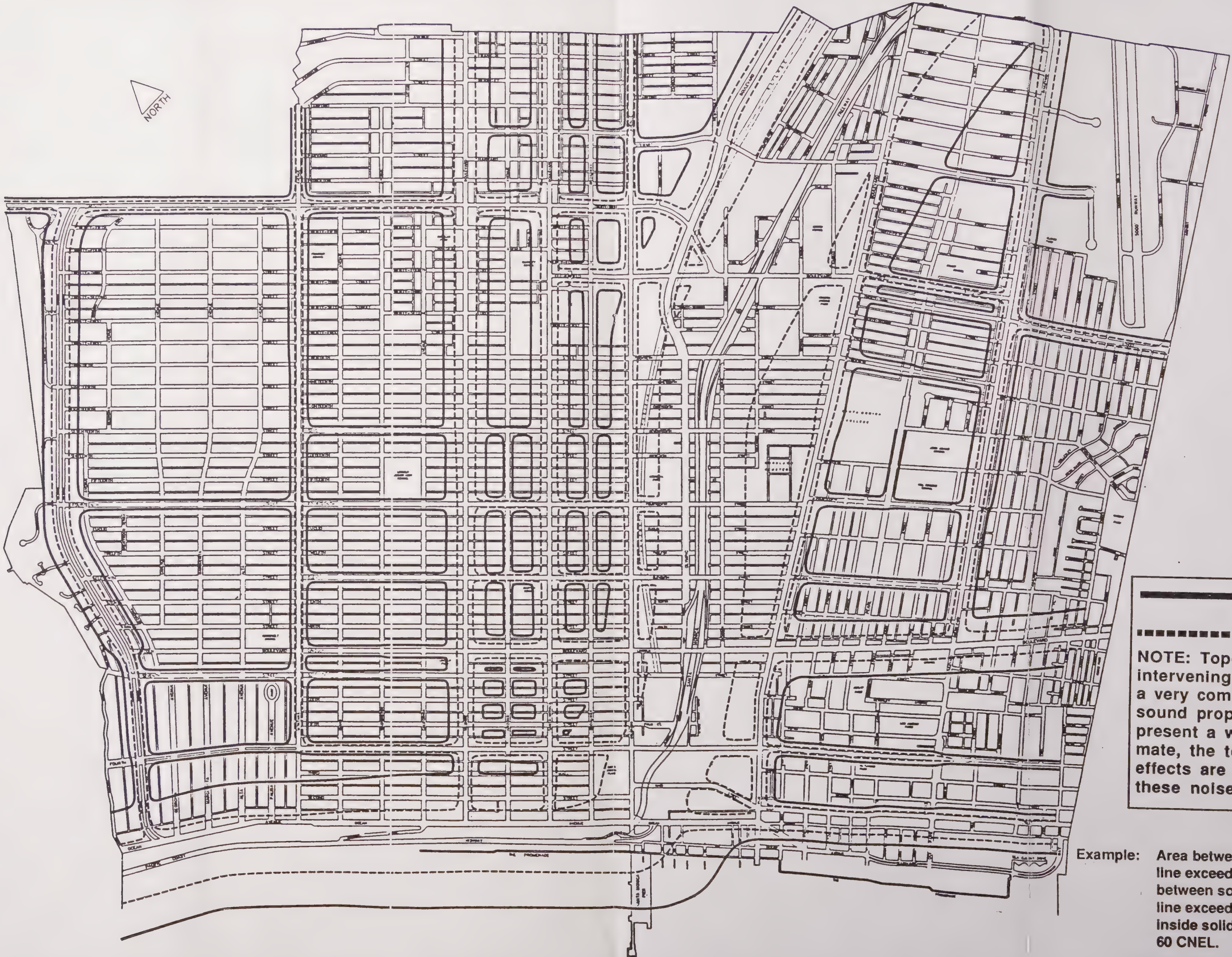
The noise contours for the City of Santa Monica were presented in Exhibits 6 and 7 for existing 1988 and future 2000 conditions respectively. The existing noise contours for Santa Monica Municipal Airport was shown in Exhibit 8. The contours are based on the existing conditions of traffic volumes and other sources of noise in the community.

Noise contours represent lines of equal noise exposure, just as the contour lines on a topographic map are lines of equal elevation. The contours shown on the map are the 60 and 65 dB CNEL noise level. The noise contours presented can be used as a guide for land use planning (see Section 3.0, Findings). The 60 dB CNEL contour defines the Noise Referral Zone. This is the noise level for which noise considerations should be included when making land use policy decisions.

The contours presented in this report are a graphic representation of the noise environment. Topography and intervening buildings or barriers have a very complex effect on the propagation of noise. To present a worst case estimate, the topographic effect is not included in these contours to present a worst case projection.

Exhibit 6

Existing Traffic CNEL Contours



60 CNEL

65 CNEL

NOTE: Topography and intervening barriers have a very complex effect on sound propogation. To present a worst case estimate, the topopgraphic effects are not included these noise contours.

Example: Area between road and dotted line exceeds 65 CNEL. Area between solid line and dotted line exceeds 60 CNEL. Area inside solid line is less than 60 CNEL.

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Exhibit 7

Future Traffic CNEL Contours

NORTH

60 CNEL

65 CNEL

NOTE: Topography and intervening barriers have a very complex effect on sound propogation. To present a worst case estimate, the topopgraphic effects are not included these noise contours.

Example: Area between road and dotted line exceeds 65 CNEL. Area between solid line and dotted line exceeds 60 CNEL. Area inside solid line is less than 60 CNEL.

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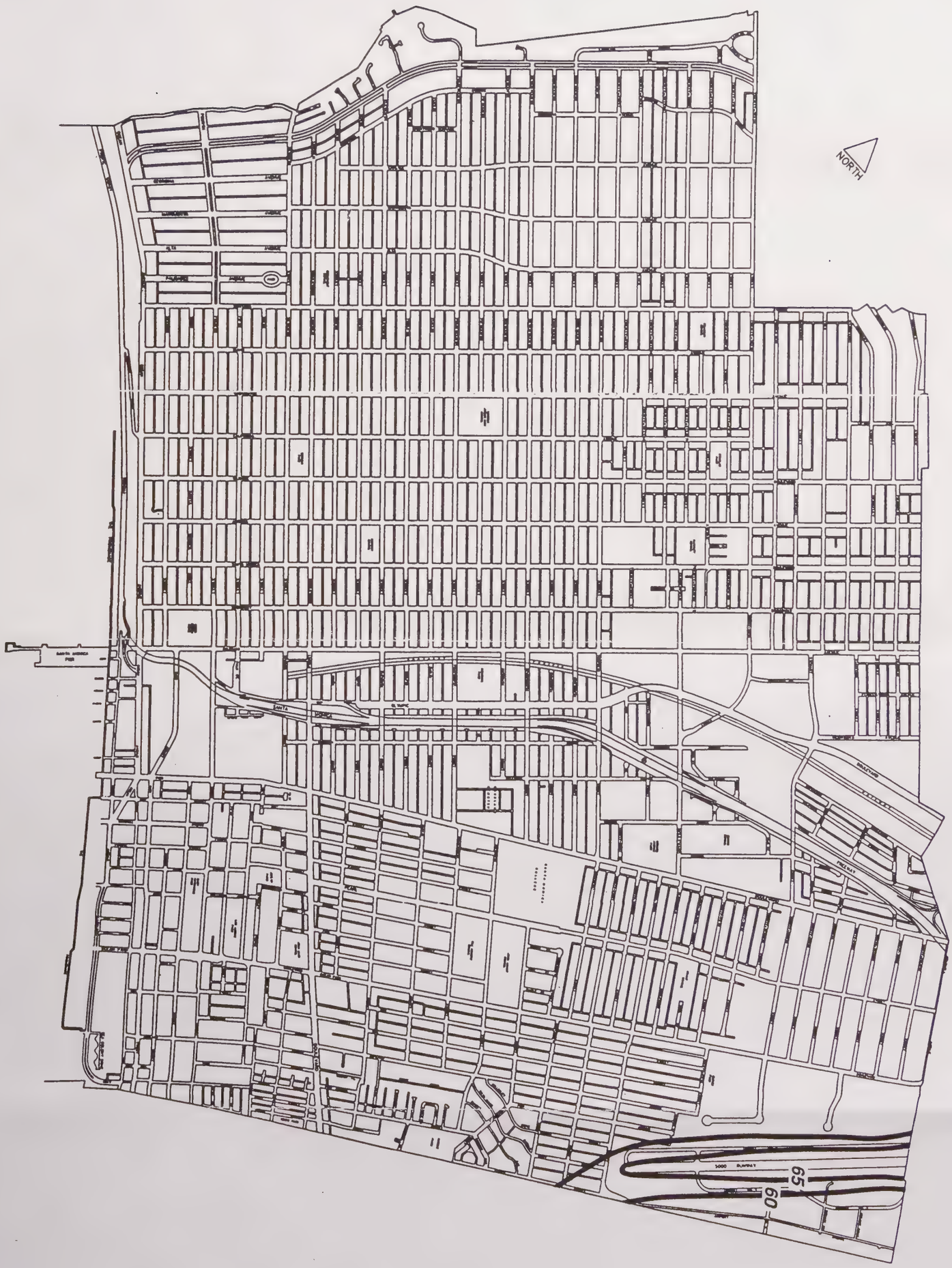

Exhibit 8

Santa Monica Municipal Airport CNEL Contours

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Section 2.0

ISSUE IDENTIFICATION

The City of Santa Monica, on the western boundary of the west side of Los Angeles, is subject to a variety of different types of noise typical of an urban area. The City has a long history of concerns and actions regarding environmental noise. The City adopted its first noise ordinance in 1921 prohibiting the overflight of churches on Sunday mornings. The City adopted a General Plan Noise Element in 1974. This document provided a comprehensive description of existing noise levels, but lacked a comprehensive set of implementing actions needed to accomplish the goals of reducing urban noise.

It is important to note that the City of Santa Monica is fully urbanized and thus experiences a set of noise problems unique to urbanized areas.

In this update of the General Plan Noise Element, the technical description of noise in Santa Monica has been updated and a series of comprehensive goals, policies, and implementing actions are developed. The process of updating the Noise Element included a review of existing city policies concerning environmental noise, a review of noise complaints, a review of City procedures for handling noise complaints, and a community workshop to solicit citizen input to this Noise Element update.

A community noise workshop was held in early December 1988. This meeting was well attended and a number of noise issues were identified and discussed. Following this community meeting, the noise measurements described in Section 2.0 were made. As a result of these observations, some noise problems area were identified.

At the citizen workshop, noise problems were grouped into 6 categories, including late-night entertainment, construction and maintenance, machinery, passenger and delivery vehicles, and general population noise. A summary of the workshop comments is as follows:

- The discussion of late night entertainment noise focused on restaurants, bars, and clubs. The primary noise sources were determined to be people and their automobiles at very late hours and live or recorded music emanating from the establishments. It was suggested that the noise ordinance should be made effective against loud music from the establishment, and that a means to control the noise of people leaving these places should be considered during the planning, review, and approval of such land uses in established residential areas.

- The discussion of construction and maintenance noise focused largely on enforcement of the noise ordinance and adequate consideration of construction noise impacts during the planning, review and approval of projects in or adjacent to established residential areas.

- The discussion of machinery noise focused on the enforcement of the noise ordinance and whether or not the ordinance was an effective means of controlling machinery noise. Specific issues of concern were enforcing the noise ordinance at night and compelling neighbors with spas to be considerate of their neighbors when using this equipment late at night. A nearly unanimous comment was that gasoline powered leaf blowers are excessively noisy for use in residential neighborhoods at any time of the day.

- The discussion of passenger and delivery vehicle noise focused on residential areas adjacent to supermarket loading areas. Night and early morning activity in these areas is common and the adjacent neighbors are frequently disturbed.

- The discussion of general population noise recognized that in a high density urban area the noise is higher than in low density rural environments. The more people put closer together the greater the noise. In such neighborhoods it may be advantageous to use a mediation technique to help neighbors resolve their differences and and be more considerate of their noise.

The concerns raised at the community meeting can be distilled into three major issues. These include Transportation Noise Control, Noise and Land Use Planning Integration, and Community Noise Control for Non-Transportation Noise Sources. These are described below.

2.1 Transportation Noise Control - Within the City of Santa Monica are a number of transportation related noise sources including freeways, aircraft overflight corridors, major arterials, and collector roadways. These sources are major contributors of noise in Santa Monica. Cost effective strategies to reduce their influence on the community noise environment are an essential part of the Noise Element.

2.2 Noise and Land Use Planning Integration - Information relative to the existing and forecast noise environment within Santa Monica should be integrated into future land use planning decisions. The Element presents the noise environment in order that the City may include noise impact considerations in development programs.

2.3 Community Noise Control for Non-Transportation Noise Sources - Residential land uses and areas identified as noise sensitive must be protected from excessive noise from non-transportation

sources including commercial and industrial activities, construction noise, late-night entertainment, spa and pool equipment, and air-conditioner noise to name a few. These impacts are most effectively controlled through the adoption and application of a City Noise Ordinance.

Section 3.0

FINDINGS

The predominate noise sources in Santa Monica, as in most other communities, come from mobile noise sources, including motor vehicles. A number of freeways and arterials expose the City to significant noise levels, particularly in those areas directly adjacent to these sources. Santa Monica Municipal Airport, located within the city, and Los Angeles International Airport, located to the south, contribute to the noise environment. To a lesser extent, helicopter operations result in some single event disturbance from occasional overflights. The noise environment in Santa Monica is typical of what would be expected of a community located within a major urban area such as the Los Angeles Basin.

Other sources of noise within the City are from non-transportation sources including industrial and commercial activities, construction activities and associated vehicular truck traffic. Within the City are a number of restaurants and clubs that cater to a late night patronage.

Noise affects all types of land uses and activities, although some are more sensitive to high noise levels than others. Land uses identified as noise sensitive include residences of all types, hospitals, rest homes, convalescent hospitals, places of worship and schools. Within the City are a number of public and private schools, day care centers and rest homes.

As described in Section 1.5, the noise environment for Santa Monica can be described using noise contours developed for the major noise sources within the City. The noise contours are used to identify areas of existing or potential noise impacts. The contours are developed for existing 1988 conditions and future 2000 conditions and are presented in Exhibits 6 and 7 respectively. Exhibit 3 presents the CNEL noise contours for Santa Monica Municipal Airport. Both the 60 and 65 dB CNEL contour levels are shown on these maps. Any existing or proposed land use within a 65 Ldn contour should be considered for noise mitigation programs. For example, within the 60 dB CNEL contour, which represents a "Noise Referral Zone", any proposed noise sensitive land use should be evaluated on a project specific basis and the project may require mitigation to meet City or State standards. The 65 CNEL represents zones where residential development should be carefully reviewed to ensure that proper mitigation is included as part of the project. Residential uses should be prohibited within the airport 65 CNEL contour and strongly discouraged within the 60 CNEL contour.

The sources of noise in Santa Monica can be divided into two basic categories, transportation sources and non-transportation sources. A local government has little direct control of transportation noise at the source because of preemption by the State and Federal Government. State and Federal agencies have the responsibility to control the noise from the source, such as vehicle noise emission levels. The most effective method the City has to mitigate transportation noise is through reducing the impact of the noise onto the community (i.e., noise barriers, land use planning, site design review, circulation improvements, truck access restrictions, etc.).

Mitigation through the design and construction of a noise barrier (wall, berm, or combination wall/berm) is the most common way of alleviating traffic noise impacts. The effect of a noise barrier is critically dependent on the geometry between the noise source and the receiver. A noise barrier effect occurs when the "line of sight" between the source and receiver is penetrated by the barrier. The greater the penetration, the greater the noise reduction.

Noise concerns should be incorporated into land use planning to reduce future noise and land use incompatibilities. This can be achieved by establishing standards and criteria that specify acceptable limits of noise for various land uses throughout the City. These criteria are designed to integrate noise considerations into land use planning to prevent noise/land use conflicts. Table 1 presents the recommended criteria used to assess the compatibility of proposed land uses with the noise environment. These criteria are the basis for the development of specific Noise Standards. These recommended Standards, presented in Table 2, presents the recommended City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure integrated planning for compatibility between land uses and outdoor noise.

The Land Use/Noise Compatibility Matrix shown in Table 1 is used in the land planning stage of the development process. It is used to identify project opportunities and constraints. In conjunction with the Noise Contour Map (Exhibit 6), this matrix may be used to determine whether a certain type of land use is appropriate in a particular CNEL zone. For example, a residential use in a 60-70 CNEL zone would only be appropriate with certain mitigation. This matrix is particularly helpful to assist in the layout and design of large mixed-use projects because it identifies the noise sensitivities of various land use types. Such consideration permits the location and layout of noise sensitive uses in lower noise exposure areas.

The Interior and Exterior Noise Standards shown in Table 2 are the actual design standards to be used in the project design stage. Compliance with these standards should be required in the Conditions of Approval or other project requirements and evaluated as part of City Development Review and building permit plan check.

Table 1

LAND USE/NOISE COMPATIBILITY MATRIX

PROPOSED LAND USE CATEGORIES		COMPATIBLE LAND USE ZONES						
CATEGORIES	USES	CNEL <55	55-60	60-65	65-70	70-75	75-80	CNEL >80
RESIDENTIAL	Single Family, Duplex, Multiple Family	A	A	B	B	C	D	D
RESIDENTIAL	Mobile Home	A	A	B	C	C	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank Restaurant, Movie Theatre	A	A	A	A	B	B	C
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
COMMERCIAL Recreation	Childrens Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
COMMERCIAL General, Special INDUSTRIAL,INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
INSTITUTIONAL General	Hospital, Church, Library Schools' Classroom, Day Care	A	A	B	C	C	D	D
OPEN SPACE	Parks	A	A	A	B	C	D	D
OPEN SPACE	Golf Course, Cemetaries, Nature CentersWildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
AGRICULTURE	Agriculture	A	A	A	A	A	A	A

INTERPRETATION

ZONE A CLEARLY COMPATIBLE	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
ZONE B COMPATIBLE WITH MITIGATION	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice. Note that residential uses are prohibited with Airport CNEL greater than 65.
ZONE C NORMALLY INCOMPATIBLE	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.
ZONE D CLEARLY INCOMPATIBLE	New construction or development should generally not be undertaken.

Table 2

INTERIOR AND EXTERIOR NOISE STANDARDS

PROPOSED LAND USE CATEGORIES		DESIGN STANDARD CNEL	
CATEGORIES	USES	INDOOR [1]	OUTDOOR OPEN SPACE [2]
RESIDENTIAL	Single Family, Duplex, Multiple Family	45 [3]	65
	Mobile Home	-----	65 [4]
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Hotel, Motel, Transient Lodging	45	65 [5]
	Commercial Retail, Bank Restaurant	55	-----
	Office Building, Research and Development, Professional Offices, City Office Building	50	-----
	Amphitheatre, Concert Hall Auditorium, Meeting Hall	45	-----
	Gymnasium (Multipurpose)	50	-----
	Sports Club	55	-----
	Manufacturing, Warehousing, Wholesale, Utilities	65	-----
	Movie Theatres	45	-----
INSTITUTIONAL	Hospital, Schools' classroom	45	65
	Church, Library	45	-----
OPEN SPACE	Parks	------	65

INTERPRETATION

1. Indoor environment excluding: Bathrooms, toilets, closets, corridors.
2. Outdoor environment limited to: Private yard of single family
   Multi-family private patio or balcony which is greater than 6 feet in depth and is not a reuired emergency fire exit as defined in the UBC..
   Mobile home Park
   Hospital patio
   Park's picnic area
   School's playground
   Hotel and motel recreation area
3. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.
4. Exterior noise level should be such that interior noise level will not exceed 45 CNEL.
5. Except those areas affected by aircraft noise.

SOURCE: City of Irvine Noise Element

The most effective method to control community noise impacts from non-transportation noise sources is through application of the Community Noise Ordinance. The City should consider amending the community noise ordinance to help ensure that City residents are not exposed to excessive noise levels from non-transportation noise sources. The Noise Ordinance is designed to protect quiet residential areas from stationary noise sources. The noise levels encouraged by the ordinance are typical of a quiet residential area. It should be noted, as will be discussed later, that while some noise problems are resolved through measurements and code enforcement actions, there are some problems that should be addressed on the human side of the issue through some form of mediation program.

Section 4.0

GOAL STATEMENT

The preceding sections of this document set the stage for the goals, policies, and actions that will address the City's noise problems. The goals are intended to describe the desired "end state" that will result from the implementation of the policies and actions of the Noise Element.

1. **Where feasible, provide for the reduction of noise where the noise environment is unacceptable.**

2. **Protect and maintain those areas having acceptable noise environments.**

3. **Provide sufficient information concerning the community noise levels so that noise can be objectively considered in land use planning decisions.**

The following section, Section 5, lists the recommended policies and implementation actions accompanying each of these goals.

Section 5.0

POLICIES AND IMPLEMENTATION

In order to achieve the goals of the Noise Element, the following policies should be considered by the City of Santa Monica:

Policy 1: **Provide for measures to reduce noise impacts from transportation noise sources. (Goal 1) These measures include:**

- o Investigate the opportunity to construct barriers to mitigate sound emissions where necessary and where feasible. Actively participate in the development of noise abatement plans for freeways and rapid transit. (Action 1.1)
- o Ensure the inclusion of noise mitigation measures in the design of new roadway projects in Santa Monica. (Action 1.6)
- o Attempt to reduce transportation noise through proper design and coordination of routing. (Action 1.2)
- o Ensure the effective enforcement of City, State and Federal noise levels by all appropriate city divisions. (Action 1.3)
- o Continue to implement and review the effectiveness of the noise control regulations adopted for the Santa Monica Municipal Airport. (Action 1.4)
- o Include noise considerations in evaluating revisions to the Circulation Element. (Action 1.6)
- o Encourage the Police Department to enforce noise provisions of the motor vehicle code. (Action 1.6)

Action 1.1 Coordinate with Caltrans to complete the installation of freeway noise barriers along the Santa Monica Freeway to effectively attenuate freeway noise for existing noise sensitive land uses. The City should ensure the employment of noise mitigation measures in the design or improvement of the Freeway

or arterial roadways consistent with funding capability and support efforts by the California Department of Transportation to provide for acoustical protection for existing noise sensitive land uses affected by these projects.

Action 1.2 Provide for continued evaluation of truck movements and routes in the City to provide effective separation from residential or other noise sensitive land uses.

Action 1.3 Encourage the enforcement of State Motor Vehicle noise standards for cars, trucks, and motorcycles through coordination with the California Highway Patrol and Santa Monica Police Department.

Action 1.4 Evaluate regularly the noise control program at Santa Monica Municipal Airport. This shall include an annual report by the Airport Director to the Airport Commission which summarizes community noise complaints and noise violations.

Action 1.5 Evaluate consistency between Noise and Circulation Elements upon next Circulation element update.

Action 1.6 Notice shall be given to all patrol officers each year summarizing the provisions of the California State Motor Vehicle Code with respect to motor vehicle noise and stressing the importance of enforcing such provisions.

Policy 2: Incorporate noise considerations into land use planning decisions (as they apply to finished projects, not construction actions). These measures will be achieved through the following programs (Goal 1, 2, 3):

- Establish acceptable limits of noise for various land uses throughout the community. Zoning changes should be consistent with the compatibility of the projected noise environment. (Action 2.1)

- Ensure acceptable noise levels near schools, hospitals, convalescent homes, and other noise sensitive areas. (Action 2.2)

- o Encourage acoustical mitigation design in new construction. (Action 2.3)

Action 2.1 Establish standards that specify acceptable limits of noise for various land uses throughout the City as part of the Noise Ordinance. These criteria are designed to fully integrate noise considerations into land use planning to prevent new noise/land use conflicts. Table 1 shows criteria recommended to assess the compatibility of proposed land uses with the noise environment. These criteria are the basis for the development of specific Noise Standards. The recommended standards, presented in Table 2, define the City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure noise integrated planning for compatibility between land uses and outdoor noise. In addition to these standards, new residential construction should be discouraged inside the 60 CNEL contour for Santa Monica Municipal Airport and within the airport residual land development area. For any project in an area louder than 60 CNEL (roadway or airport), the project should be flagged for Building and Safety review for compliance with interior noise level standards.

Action 2.2 Through the Noise Ordinance, incorporate noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses. The noise referral zones identified in Exhibits 6 and 7 (areas exposed to noise levels greater than 60 dB CNEL) can be used to identify locations of potential conflict. New developments would be permitted only if appropriate mitigation measures are included such that the standards contained in this Element are met.

Action 2.3 Continue to enforce the State of California Uniform Building Code that specifies that the indoor noise levels for residential living spaces not exceed 45 dB CNEL due to the combined effect of all noise sources. The State requires implementation of this standard when the outdoor noise levels exceed 60 dB CNEL. The Noise Referral Zones (60 dB CNEL) can be used to determine when this

standard needs to be addressed. The Uniform Building Code (specifically, the California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Sections T25-28) requires that "Interior community noise levels (CNEL/LDN) with windows closed, attributable to exterior sources shall not exceed an annual CNEL or LDN of 45 dB in any habitable room." The code requires that this standard be applied to all new hotels, motels, apartment houses and dwellings other than detached single-family dwellings. The City should also, as a matter of policy, apply this standard to single family dwellings.

Policy 3: Develop measures to control non-transportation noise impacts (Goal 1,2).

- Adopt a revised Community Noise Ordinance to mitigate noise conflicts. (Actions 3.1 and 3.2)
- Improve enforcement of required noise mitigation measures in building design. (Action 3.3)
- Establish and maintain coordination among the city agencies involved in noise abatement. (Action 3.5)

Action 3.1 Amend the community noise ordinance to ensure that City residents are not exposed to excessive noise levels from stationary noise sources. The purpose of the ordinance is to protect people from non-transportation related noise sources such as music, machinery and pumps and air conditioners. The Noise Ordinance does not apply to motor vehicle noise on public streets, but it does apply to vehicles on private property. The Noise Ordinance is designed to protect quiet residential areas from stationary noise sources. The noise levels encouraged by the ordinance are typical of a quiet residential area. The noise ordinance should establish specific noise level limits that can be enforced by scientific measurements, but should also recognize that some neighborhood noise problems are best handled through action by public safety personnel (for example, loud parties) and some through enhanced communication between neighbors. This latter idea is meant to address the more

human side of noise complaints between neighbors.

To address the human side of some noise problems, particularly those between arguing or feuding neighbors (residential or commercial or mixed use), enhanced communication between neighbors may bring the best resolution to these types of problems. The City should develop a mediation program for this purpose with the support of an agency other than the City. Mediation cases can be referred to this agency by the Noise Control Officer (NCO).

Action 3.2 Review and revise the Noise Ordinance to accommodate the observed difficulties in enforcing the existing ordinance. This revision should include, but not be limited to, the exploration of including the following concepts:

1. Consider revising the noise metric to an "Equivalent Noise Level", (Leq) measurement to facilitate easier and quieter measurements. This will reduce the complexity of equipment needed to do the measurements and result in a clearer more readily usable measurement result.

2. Consider the total ban on gasoline powered leaf blowers, unless an operator obtains a prior permit from the City demonstrating compliance with the ordinance limits.

3. Consider deleting the requirement to measure barking dog noise as part of the ordinance enforcement. The presence of the measurement technician may ind uce the dog to bark thus bringing into question the validity of the measurement. Kennels should remain subject to the noise measurements.

Action 3.3 Require that new commercial and residential projects to be built near existing residential land use demonstrate compliance with the City Noise Ordinance prior to approval of the project. This shall include a requirement that all project plans show the location of mechanical equipment in relation to adjacent noise-sensitive (i.e., residential) uses. Require that all Building

Permit applicants, including contractors, sign a form acknowledging requirements of the noise ordinance, and assuming responsibility for compliance with the noise ordinance. This is particularly important for the non-resident contractor installing mechanical equipment.

Policy 4: The City shall develop measures to control construction noise impacts (Goal 3).

Action 4.1 Consider incorporating the following provisions into the Noise Ordinance to address the problems of construction noise:

1. Clearly state the permitted hours of construction and expressly prohibit construction on Sunday.

2. Consider exempting the resident/builders in single family zones from the Sunday construction and maintenance ban provided such construction is limited to the hours specified in the Noise Ordinance or meets the noise limits set in the Noise Ordinance.

3. During the environmental review of all projects requiring extensive construction, determine the proximity of the site to the established residential areas. If the project will involve pile driving, night time truck hauling, blasting, 24 hour pumping (important in coastal excavations), or any other very high noise equipment, the environmental review shall include a construction noise alternative analysis. From this analysis specific mitigation measures shall be developed to mitigate potential noise impacts. This may include but not be limited to:

    - o requirements to use quieter albeit costlier construction techniques.

    - o notification of residents (homeowner and renters) of time, duration, and location of construction.

    - o relocation of residents to hotels during noisy construction period.

- developer reimbursement to City for 24 hour on-site inspection to verify compliance with required mitigation.

- limit hours of operation of equipment 15 dB above noise ordinance limits to the hours of 10am to 4pm.

The selection of which of the above measures to include should be determmined on a project by project basis depending on the type of equipment used and the proximity to established residential areas. It should also be recognized that during the early planning phases for a project such as zone change application, sufficient data may not be available to determine the extent of construction noise mitigation required. In such cases the project should be required to prepare this analysis as part of the site design or building permit process for review and approval by the Director of Community and Economic Development.